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ATTORNEY DOCKET NO. **10004278-1**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Mikes, et al.

Serial No.: 10/685,270 **Examiner: Hughes, James P.**

Filing Date: October 14, 2003 **Group Art Unit: 2883**

Title: System and Method for Using Concentric Spectrometer to Multiplex or Demultiplex Optical Signals

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on

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(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

☐	one month	$ 120.00
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☒ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

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Respectfully submitted,

Mikes, et al.

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: **Mikes, et al.**			
Serial No.:	10/685,270	Art Unit:	2883
Filed:	October 14, 2003	Examiner:	Hughes, James P.
For:	SYSTEM AND METHOD FOR USING CONCENTRIC SPECTROMETER TO MULTIPLEX OR DEMULTIPLEX OPTICAL SIGNALS	Docket No.:	10004278-1

APPEAL BRIEF UNDER 37 C.F.R. §1.192

Mail Stop Appeal Brief - Patents
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P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief under 37 C.F.R. §1.192 is submitted in support of the Notice of Appeal filed November 16, 2005, responding to the final Office Action of August 24, 2005.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to Agilent Technologies, Inc. Deposit Account No. 50-0778.

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I. REAL PARTY IN INTEREST

The real party in interest of the instant application is the assignee, Agilent Technologies, Inc.

II. RELATED APPEALS AND INTERFERENCES

There are no known related appeals and interferences that will affect or be affected by a decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 1-9 are pending in the present application. The final Office Action of August 24, 2005, rejected claims 1-9 under 35 U.S.C. §103 as allegedly being unpatentable over *Dragone* (U.S. Patent No. 6,263,127) in view of *Xiang* (U.S. Patent No. 6,263,140).

IV. STATUS OF AMENDMENTS

No amendments have been made or requested since the mailing of the final Office Action. A copy of the current claims is attached hereto as Appendix A.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A system (e.g., reference numerals 30, 60 of Figures 6 and 8, respectively) of at least some embodiments multiplexes and demultiplexes optical signals. The system comprises an optical fiber interface (e.g., reference numerals 146, 147 of Figures 6 and 8) and a concentric spectrometer (e.g., reference numeral 100 of Figures 6 and 8) that is coupled to the optical fiber interface (e.g., Paragraph 26, lines 5-6, and Paragraph 33, lines 5-9).

In at least one embodiment, the concentric spectrometer and optical interface are arranged such that the concentric spectrometer receives a multi-wavelength signal from an optical fiber (e.g., reference numeral 110 of Figure 6) coupled to the optical fiber interface and spatially separates the multi-wavelength optical signals into its constituent component optical signals (e.g., Paragraph 27, lines 1-11).

In at least one other embodiment, the concentric spectrometer and optical interface are arranged such that the concentric spectrometer receives component optical signals from optical fibers (e.g., reference numeral 197 of Figure 8) coupled to the optical fiber interface and spatially overlaps the component optical signals into a multi-wavelength optical signal (e.g., Paragraph 34, lines 1-5).

A method of at least some embodiments demultiplexes optical signals. The method comprises providing a concentric spectrometer (e.g., reference numeral 100 of Figure 6) and receiving a multi-wavelength optical signal at the concentric spectrometer (e.g., Paragraph 27, lines 1-6, and Figure 6). The method also comprises spatially separating the multi-wavelength optical signal into its constituent component optical signals using the concentric spectrometer (e.g., Paragraph 27, lines 6-11).

A method of at least some embodiments multiplexes optical signals. The method comprises providing a concentric spectrometer (e.g., reference numeral 100 of Figure 8) and receiving component optical signals at the concentric spectrometer (e.g., Paragraph 34, lines 1-2, and Figure 8). The method also comprises spatially overlapping the component optical signals into a multi-wavelength optical signal using the concentric spectrometer (e.g., Paragraphs 34-46 and Figure 8).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-9 are rejected under 35 U.S.C. §103 as allegedly being unpatentable over *Dragone* (U.S. Patent No. 6,263,127) in view of *Xiang* (U.S. Patent No. 6,263,140).

VII. ARGUMENT

In order for a claim to be properly rejected under 35 U.S.C. §103, the combined teachings of the prior art references must suggest all features of the claimed invention to one of ordinary skill in the art. See, *e.g.*, *In Re Dow Chemical Co.*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981). Further, "(t)he PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). In addition, the Federal Circuit has stated that "(i)t is impermissible, however, to simply engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps." *In re Gorman*, 933 F.2d 982, 987, 18 U.S.P.Q.2d 1885 (1991).

Discussion of 35 U.S.C. §103 Rejections of Claims 1, 2, and 4-7

Claims 1, 2, and 4-7 presently stand rejected in the final Office Action under 35 U.S.C. §103 as allegedly unpatentable over *Dragone* (U.S. Patent No. 6,263,127) in view of *Xiang* (U.S. Patent No. 6,263,140). For at least the reasons set forth below, Applicants respectfully assert that the cited art fails to provide a sufficient motivation for combining *Dragone* and *Xiang* under 35 U.S.C. §103, and the rejections of claim 1, 2, and 4-7 are, therefore, improper.

In this regard, *Dragone* discloses a waveguide router that demultiplexes an optical data "signal" communicated through an optical fiber. It is alleged in the final Office Action that it would have been obvious to use a "concentric spectrometer" disclosed by *Xiang* for multiplexing or demultiplexing the optical data "signals" of *Dragone*. In particular, it is asserted in the final Office Action that:

> "One of ordinary skill in the art at the time of the invention would have been motivated to incorporate an aberration corrected concentric spectrometer such as taught by Xiang, into the multiplexer and demultiplexer of Dragone; because Xiang teaches that an aberration corrected concentric spectrometer may reduce the crosstalk (resolution) between the constituent wavelength component signals of a demultiplexer (See e.g., Col. 1, 11. 15-45) and as Dragone acknowledges, suppressing the inter-signal crosstalk from the constituent wavelength component signals is advantageous (See e.g., Col 1, 11. 15-25)."

Applicants respectfully disagree that *Xiang* teaches using a concentric spectrometer to "reduce the crosstalk (resolution) between the constituent wavelength component signals of a demultiplexer," as alleged in the final Office Action. In this regard, the concentric spectrometer of *Xiang* does not demultiplex or otherwise process optical "signals," such as those described by *Dragone*, for conveying digital data. Instead, the concentric spectrometer of *Xiang* disperses spectra from an "image of a scene." See column 1, lines 17-18. For example, the concentric spectrometer may be employed within a telescope so that an "image" from a distant object, such as a celestial body, can be better analyzed. See column 1, line 19. In such an example, the "image" of the distant object may be spectrally dispersed by the concentric spectrometer to

generate "hundreds of spectra" that can then be measured and analyzed to determine various attributes of the distant object, such as its composition of matter. See column 1, lines 17-24. However, the "images" of *Xiang*, unlike the optical data "signals" of *Dragone*, do not usually convey digital data and are not typically transmitted through optical fibers. Indeed, *Xiang* specifically teaches that the concentric spectrometer receives an "image" from a slit 20, not an optical fiber. See column 1, line 19; column 3, lines 15-16; and Figures 5 and 6.

Thus, the types of light being processed by the router of *Dragone* and the concentric spectrometer of *Xiang* are quite different, and when the cited art is properly viewed as a whole, it becomes readily apparent that the cited art lacks a sufficient suggestion or motivation for using the concentric spectrometer of *Xiang* for the purpose of demultiplexing or otherwise processing optical data "signals," such as are described by *Dragone*. "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application for a showing of the teaching or motivation to combine prior art references." *In re Dembiczcak*, 175 F.3d 994, 50 U.S. P.Q.2d 1614, 1617 (Fed. Cir. 1999).

In responding to arguments set forth in the First Response filed by Applicants on March 17, 2005, it is alleged in the final Office Action that Applicants' arguments traversing the alleged combination of *Dragone* and *Xiang* are unpersuasive because:

> "the concentric spectrometer of Xiang may receive an optical signal (comprising multi-wavelength component light) and demultiplex said signal into its competent spectra-or individual wavelengths. Xiang teaches that a concentric spectrometer may efficiently reduce crosstalk (resolution) between the constituent wavelength components. As is commonly known in the art and acknowledged by Dragone, suppressing the inter-signal crosstalk from the constituent component signals is advantageous (see e.g., Col. 1, 11, 15-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to employ an efficient multiplexing device, such as a concentric spectrometer taught by Xiang. Following, one of ordinary skill in the art would have been motivated to do so to yield an efficient device as discussed above and in the rejection below." Pages 2-3.

Applicants respectfully traverse the allegation in the final Office Action that *Xiang* teaches the use of a concentric spectrometer to reduce "crosstalk." In this regard, "crosstalk" is a well-known term associated with data communication interference between multiple data channels. In particular, optical "crosstalk" refers to interference induced by light bleeding from a first data channel to a second data channel thereby degrading the communication occurring within the second data channel. For at least the reasons set forth above, Applicants submit that the light paths within the concentric spectrometer of *Xiang* have nothing whatsoever to do with data communication. Indeed, no data channels even exist within the concentric spectrometer described by *Xiang*. Moreover, alleging that *Xiang* teaches "crosstalk" reduction is a mischaracterization of the teachings of *Xiang*.

Contrary to the allegations in the final Office Action, *Xiang* does not discuss "crosstalk" reduction but rather discusses using a concentric spectrometer to process an "image" of a scene, a type of light vastly different than the optical data "signals" described by *Dragone*. Applicants submit that one of ordinary skill in the art would not readily seek solutions for multiplexing and demultiplexing optical data signals in a reference, such as *Xiang*, that does not even discuss such signals. When the cited art is properly characterized and viewed as a whole, it is apparent that the alleged motivation for combining *Xiang* and *Dragone* is not gleaned from the teachings of the cited art but is instead based on impermissible hindsight reconstruction of Applicants' invention. "When the patented invention is made by combining known components to achieve a new system, the ***prior art*** must provide a suggestion or motivation to make such combination." *Heidelberger Druckmaschinen v. Hantscho Commercial Products, Inc.*, 21 F.3d 1068, 1072, 30 U.S.P.Q.2d 1377 (Fed. Cir. 1994) (emphasis added).

For at least the above reasons, Applicants respectfully assert that the final Office Action fails to establish a *prima facie* case of obviousness with respect to claim 1. Accordingly, the 35 U.S.C. §103 rejection of claim 1 should be overruled.

Discussion of 35 U.S.C. §103 Rejections of Claims 3, 8, and 9

Claims 3, 8, and 9 presently stand rejected in the final Office Action under 35 U.S.C. §103 as allegedly unpatentable over *Dragone* (U.S. Patent No. 6,263,127) in view of *Xiang* (U.S. Patent No. 6,263,140). Claim 3 comprises similar claimed limitations, which are missing from the alleged combination of *Dragone* and *Xiang,* as claim 8. Furthermore, claim 9 depends from claim 8. Therefore, claim 8 is discussed below as an exemplary claim for discussion.

For at least reasons similar to those set forth above in the Discussion of 35 U.S.C. §103 Rejections of Claims 1, 2, and 4-7, Applicants respectfully assert that the combination of *Dragone* and *Xiang* and, therefore, the 35 U.S.C. §103 rejection of claim 8 are improper.

In addition, claim 8 reads as follows:

> 8. A method for multiplexing optical signals, comprising:
> providing a concentric spectrometer;
> receiving component optical signals at the concentric spectrometer; and
> ***spatially overlapping the component optical signals*** into a multi-wavelength optical signal ***using the concentric spectrometer***. (Emphasis added).

Applicants respectfully assert that the alleged combination of *Dragone* and *Xiang* fails to suggest at least the features of claim 8 highlighted above. Accordingly, the 35 U.S.C. §103 rejection of claim 8 is improper.

In this regard, *Xiang* describes a concentric spectrometer but specifically teaches that this spectrometer is to be used to "***disperse***" spectra. See, e.g., column 3, lines 21-24 and 40. (Emphasis added). Thus, upon reading *Xiang*, one of ordinary skill in the art would be

discouraged from using the concentric spectrometer of *Xiang* for "spatially ***overlapping***" component optical signals into a "multi-wavelength optical signal," as described by claim 8. (Emphasis added). A reference "teaches away" from the claimed invention and should not be used to reject the claimed invention under §103 "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 2 F.3d 551, 31 U.S.P.Q.2d 1130, 1131 (Fed. Cir. 1994).

It is nevertheless alleged in final Office action that *Xiang* does not teach away from *Dragone* because "Dragone discusses (See e.g., Col. 1, ll. 14 – 55) it is well known in the art that the same device may multiplex and demultiplex optical signals." First of all, Applicants submit that the cited section of *Dragone* is insufficient for establishing that "it is well known in the art that the same device may multiplex and demultiplex optical signals," as alleged in the final Office Action. In fact, the Summary of the Invention in *Dragone* appears to describe a "demultiplexer" and makes no mention of such device being used as a multiplexer. In addition, even if it is assumed for argument's sake that the "demultiplexer" described by *Dragone* may be used as a multiplexer, Applicants respectfully assert that the final Office Action still fails to establish a *prima facie* case of obviousness with respect to claim 8.

In this regard, establishing that ***some*** devices may be used to multiplex and demultiplex optical signals is insufficient for establishing that it would be obvious to use the particular concentric spectrometer described by *Xiang* to spatially overlap optical signals. Indeed, there is not a single reference in the cited art that suggests the use of a concentric spectrometer, such as the one described by *Xiang*, to spatially overlap optical signals in ***any*** described embodiment. Moreover, even if the teachings at column 1, lines 14-55, of *Dragone* suggest that one or more conventional devices may be used to both multiplex and demultiplex optical signals, these

teachings are insufficient for overcoming the explicit teachings of *Xiang* to use a concentric spectrometer for "dispersing" light.

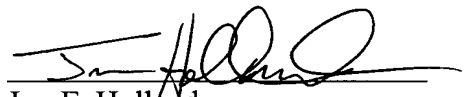
For at least the above reasons, Applicants submit that the cited art fails to suggest each feature of claim 8. Therefore, the 35 U.S.C. §103 rejection of claim 8 is improper and should be overruled.

CONCLUSION

Based on the foregoing discussion, Applicants respectfully request that the Examiner's final rejections of claims 1-9 be overruled and withdrawn by the Board, and that the application be allowed to issue as a patent with all pending claims.

Respectfully submitted,

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, L.L.P.

By: 

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VIII. CLAIMS - APPENDIX

1. A system for multiplexing or demultiplexing optical signals, comprising:

an optical fiber interface; and

a concentric spectrometer coupled to the optical fiber interface.

2. The system of claim 1, wherein the concentric spectrometer and optical interface are arranged such that the concentric spectrometer receives a multi-wavelength signal from an optical fiber coupled to the optical fiber interface and spatially separates the multi-wavelength optical signal into its constituent component optical signals.

3. The system of claim 1, wherein the concentric spectrometer and optical interface are arranged such that the concentric spectrometer receives component optical signals from optical fibers coupled to the optical fiber interface and spatially overlaps the component optical signals into a multi-wavelength optical signal.

4. The system of claim 1, wherein the concentric spectrometer comprises an aberration-corrected diffraction grating.

5. The system of claim 1, wherein the optical fiber interface is coupled to an optical fiber such that the optical fiber is optically coupled to the concentric spectrometer.

6. A method for demultiplexing optical signals, comprising:

providing a concentric spectrometer;

receiving a multi-wavelength optical signal at the concentric spectrometer; and

spatially separating the multi-wavelength optical signal into its constituent component optical signals using the concentric spectrometer.

7. The method of claim 6, wherein the concentric spectrometer comprises an aberration-corrected diffraction grating.

8. A method for multiplexing optical signals, comprising:

providing a concentric spectrometer;

receiving component optical signals at the concentric spectrometer; and

spatially overlapping the component optical signals into a multi-wavelength optical signal using the concentric spectrometer.

9. The method of claim 8, wherein the concentric spectrometer comprises an aberration-corrected diffraction grating.

IX. EVIDENCE - APPENDIX

None.

X. RELATED PROCEEDINGS - APPENDIX

None.